THE NORTH CAROLINA AGRICULTURAL WEATHER ADVISORY SERVICE

AGRO MET

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The North Carolina Agricultural Weather Program was initiated in 1980. The program is cooperatively funded by the National Weather Service of the U. S. Department of Commerce and the Extension Service of the U. S. Department of Agriculture and North Carolina. The program is housed and administered within the Department of Horticultural Science, School of Agriculture and Life Sciences, N. C. State University, Raleigh. The program includes both extension and research components. Two agricultural meteorologists and one secretary comprise the personnel.

The program's main charge is to provide the N. C. agricultural community with weather information pertinent to their farming needs. The three main geographical and climatic sections which comprise North Carolina are the Coastal Plain, Piedmont, and Mountains. The Coastal Plain covers about half the state, extending inland about 125 miles. It is very level, sloping gently upward from the coast about one foot per mile. The central Piedmont area is distinguished from the Coastal Plain by a fall line which probably was the shoreline thousands of years ago. A plateau of rolling hills, the Piedmont varies in elevation from 150 to 1000 feet. It covers about two-fifths of the state. The Mountains of North Carolina include the Blue Ridge and Great Smokies ranges. Covering the remaining one-fifth of the state the many peaks, valleys, and cross chains of mountains make this area quite distinct. Peaks frequently rise above 5,000 feet, with numerous peaks above 6,000. Varying elevations coupled with varying proximity to the ocean's influence create a diverse climate across the state. Average annual precipitation ranges from more than 80 inches in the southwest county of Transylvania to less than 40 inches in the central mountain valley area. The growing season (freeze-free season) ranges from less than 150 days in the northwest mountains to more than 280 on the Outer Banks. This creates a very diverse agricultural industry. Commodities include both agronomic and horticultural crops as well as livestock, poultry, and swine. North Carolina ranks first in the United States in the production of tobacco, sweet potatoes, and turkeys (2). North Carolina is also a significant producer of cucumbers, peanuts, eggs, broilers, snap beans, cabbage, peaches, hogs, honey, grapes, strawberries, and greenhouse and nursery commodities.

Information is provided by twice daily agricultural weather advisories. These are entered into the NWS AFOS network via a TI-Silent 700 computer terminal. They are issued at 0510 Tuesday through Saturday and 0935 Monday through Friday. They are released on the NOAA Weather Wire and then broadcast via the NOAA Weather Radio Network. There are nine NWR stations in North Carolina. The AP and UPI circuits carrying the product further disseminate it to a wider audience of commercial stations. A recent survey (3) found that approximately one-third of the state's radio stations air the advisories.

The two agricultural meteorologists use the National Weather Service forecast products. In addition to the NOAA Weather Wire circuit, the program receives the NAFAX and GOES lines. Crop status information is received from the agricultural faculty on the campus. This is one of the advantages of being a part of the School of Agriculture and Life Sciences, and specifically the Extension Service. Agriculture extension agents in each of North Carolina's one hundred counties communicate regularly with campus based commodity specialists. The agricultural meteorologists are able to contact these other specialists to get current county-level information. Similarly, the meteorologists use this network to reach new users by contacting them through already established and accepted extension agents. It provides a means of keeping up-to-date on the many agricultural activities ongoing statewide.

Another source of information is the Volunteer Touch Tone Network. This network includes 100 volunteer observers (one in each county) who have been provided with a maximum-minimum thermometer and rain-gauge. The Extension Service provides and maintains the equipment while the NWS supports the data management. Each observer reports his/her daily observations of maximum and minimum temperatures, present temperature and weather, precipitation or snow melt, wind direction and wind speed (estimated from the Beaufort scale). In addition, 11 observers also report maximum and minimum soil temperatures at a four inch (10 cm) depth under bare soil.

The information compiled to produce the advisory is tailored to the current weather sensitive agricultural activities. Included, when pertinent, are items such as expected heat/cold severity for livestock and poultry, frost/freeze warnings, soil temperatures for seed germination, planting date decisions and fumigation operations, precipitation probabilities for pesticide and fertilizer applications and irrigation scheduling, wind speed and direction for spray operations, and temperatures and humidities for disease management.

Another major charge of the program is to implement education programs for the users of the service. This facet has incorporated much promotional and public relations work during the early development of the program. To let growers know the service is available was a major necessity at the onset. Regularly scheduled extension meetings provided an ideal medium for this endeavor. To be introduced and endorsed by a well respected county agent familiar with the farmers' needs was a head start to becoming a part of the farmers' available resources. Just as important, however, is helping users to knowledgeably use the product. As they begin to incorporate the information into their decision making processes, they must understand the inherent limitations. They need to be fully aware of the confidence interval on forecasted parameters. They need to be informed of the state-of-the art capability. For instance, programs describing the limitations of a minimum temperature forecast for a clear, calm night in the mountain zones has helped apple growers better assess their frost protection requirements. Lack of user understanding is certainly not a unique facet of agricultural meteorology, but one from which all synoptic meteorology endeavors often suffer. This program seeks to help users understand what to expect with regard to advisory reliability.

REFERENCES AND FOOTNOTES

1. Katharine B. Perry is Assistant Professor of Horticulture at North Carolina State University. Her research efforts involve microclimate of Fraser Fir plantation, predicting European Corn Borer emergence from meteorological parameters, and using growing degree days for better planting and harvesting decisions.

2. Olson, J. L. and R. L. Griffith, 1982: North Carolina Agricultural Statistics. N. C. Crop and Livestock Reporting Service, Raleigh, NC.

3. Johnson, G. L. and K. B. Perry, 1982: Broadcasters' Use of Agricultural Weather Products: A North Carolina Survey. Bul. Amer. Meteo. Soc. (submitted).

NWA Annual Meeting

ANNUAL MEETING - CALL FOR PAPERS

The seventh annual meeting of the National Weather Association will be held at Kansas City, MO on November 14 and 15, 1983.

Those wishing to make a presentation should send a short abstract or very brief summary to:

Edward W. Ferguson
NSSC
Federal Building, Room #1728
601 E. 12th Street
Kansas City, MO 64106.

The abstract should be sent no later than mid-August so that sessions can be planned.